Service

Installing Optional Parts 2
Cutter Installation 2
Dispenser Installation 4
Printhead Replacement 6
Operational Theorem 8
System block diagram 8
Panel board diagram and description 10
Sensor board diagram and description ... 10
Wiring diagram 11
Firmware upgrading 12
Upgrade Utility and Diskette 12
Procedure to change the PPLA 12
Procedure to change the PPLB 13
Verification 13
EPROM files 13
Index 14

Installing Optional Parts

The printer electronics are susceptible to static discharge. Wear an anti-static wrist and attach it to the printer chassis.

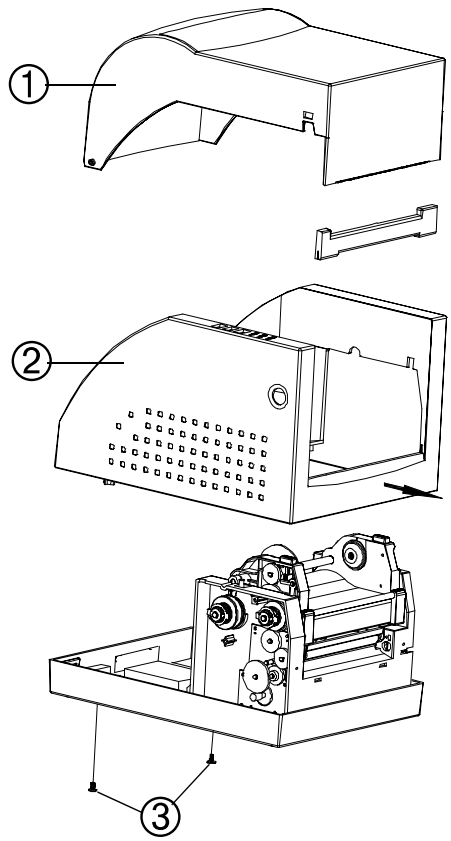
Cutter Installation

1. Turn off the power switch.
2. Remove the top cover (1). Unscrew both screws (3) and remove the middle cover (2) (Fig. 1).

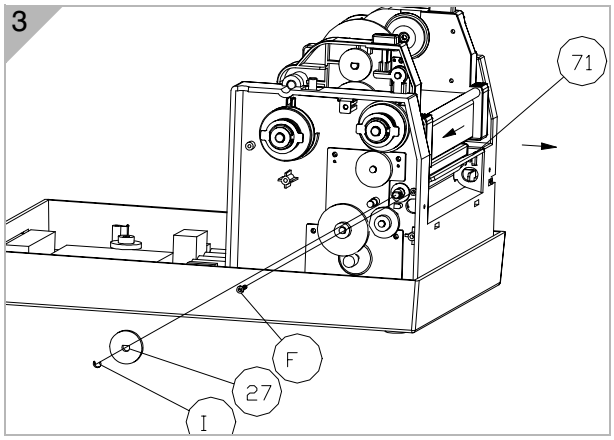
Pull the front part (arrow) of the middle cover, when removing it!

3. Remove the E-ring (I), gear (27) and release the screw (F) (Fig. 3).
4. Remove the bracket-peeler (71) from the module (Fig. 3).
5. Secure two attached screws (B) for the cable connector (Fig. 4).
6. Add a baby board to JP29 on the main board.
7. Plug the cable connector into JP13 and make sure jumper JP1 position is 2-3.
8. Click back the middle cover.
9. Click back the top cover.

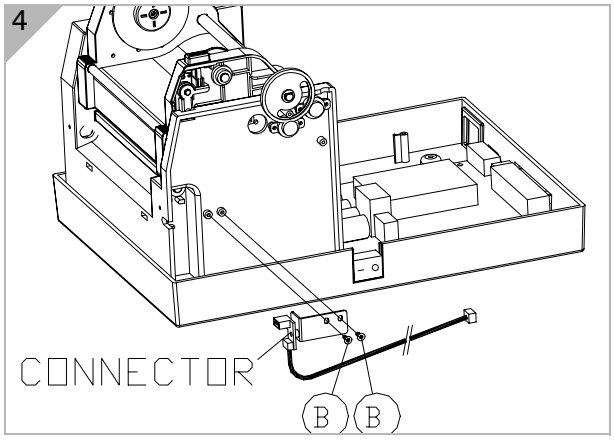
1



3



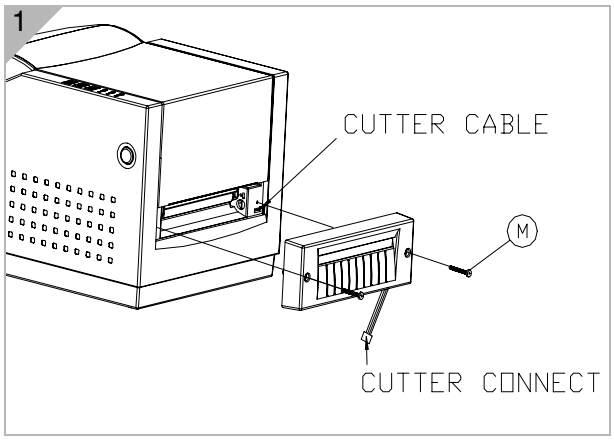
4



10. Secure two attached screws (M) for the cutter (Fig. 1).
11. Plug the cutter cable into external connector (Fig. 1).

Install the media and the ribbon after the cutter is properly installed:

1. Put the media end on the roller.
2. Close the printer module.
3. Turn on the printer.
4. Press the FEED button to let the media end go through the cutter.



Dispenser Installation

Installation

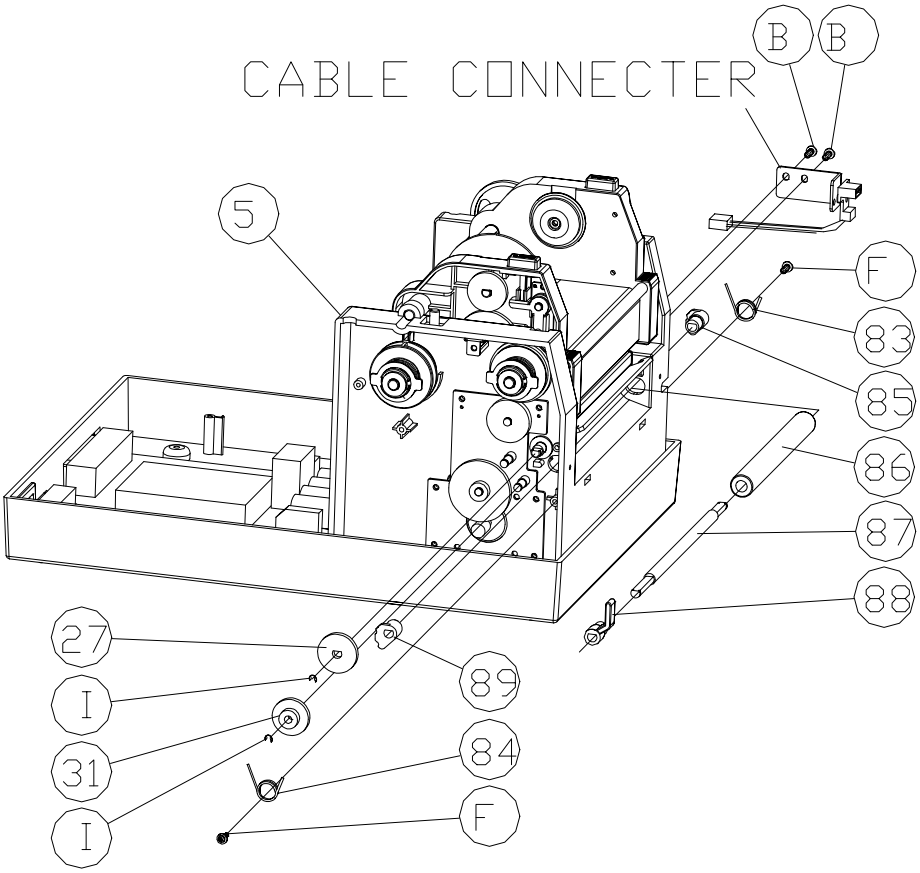


Fig. 1: Installing the dispenser.

1. Turn off the power switch.
2. Remove the top cover and middle cover.

❍ See paragraph Cutter Installation on page 2.

3. Remove gear (27) and (31).
4. Plug spring–peeler (83) into the right hole on chassis 2 and lock screw (F) up.
5. Put shaft-peeler (86) and peeler-switch (88) into shaft-peeler (87) and then insert it in hole on right side.
6. Guide peeler-switch (85) go through shaft-peeler (87).
7. Hook spring-peeler (83) on the circle notch of shaft-peeler (87).
8. Put spring-peeler (84) into the left hole of chassis 2 and lock screw (F) up.
9. Put peeler-switch (89) into shaft-peeler (87).
10. Hook spring-peeler (84) on the circle notch of shaft-peeler (87).
11. Put back gear (27) and gear (31).
12. Mount the cable into chassis 2 and plug the other side into the label on the main board

13. Close the middle cover.
14. Plug the peeler sensor into the cable on middle cover.
15. Put peeler cover on the front of middle cover (see Fig. 2).

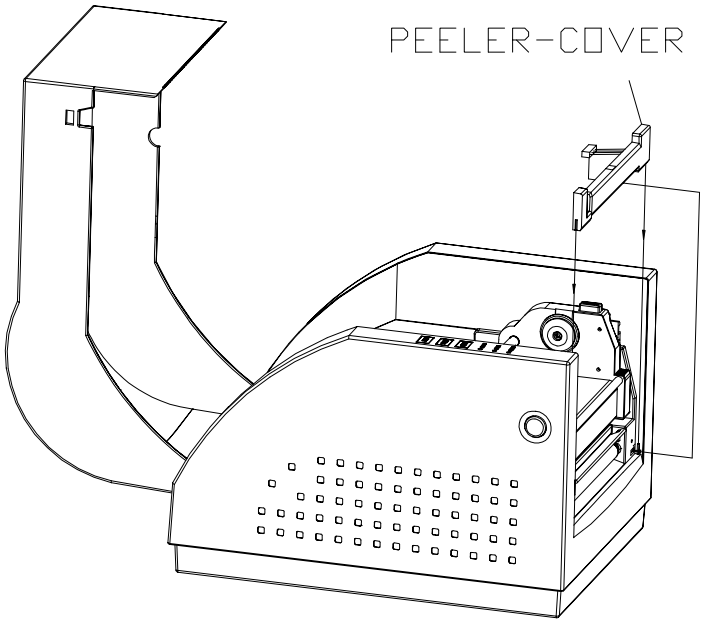


Fig. 2: Putting back the peeler cover.

Sensor calibration

If the dispenser sensor is fail to detect label, to calibrate the sensor is required. There are two commands for this purpose:

Command	ASCII	Binary	Remark
Command 0	<ESC>$R0	1BH 24H 52H 30H	Set sensor without label
Command 1	<ESC>$R1	1BH 24H 52H 31H	Set sensor with label

Tab. 1: Sensor calibration commands.

1. Put the label away from the sensor, send command 0 and wait for 2 more seconds.
2. Put a label under the sensor (10 mm below), hold it, send command 1 and wait for 2 more seconds.

Printhead Replacement

The printer electronics are susceptible to static discharge. Wear an anti-static wrist and attach it to the printer chassis!

To replace the printhead, please follow the procedure as shown on Fig. 3 and Fig. 4.

It is also possible to replace the printhead without remove the print head module.

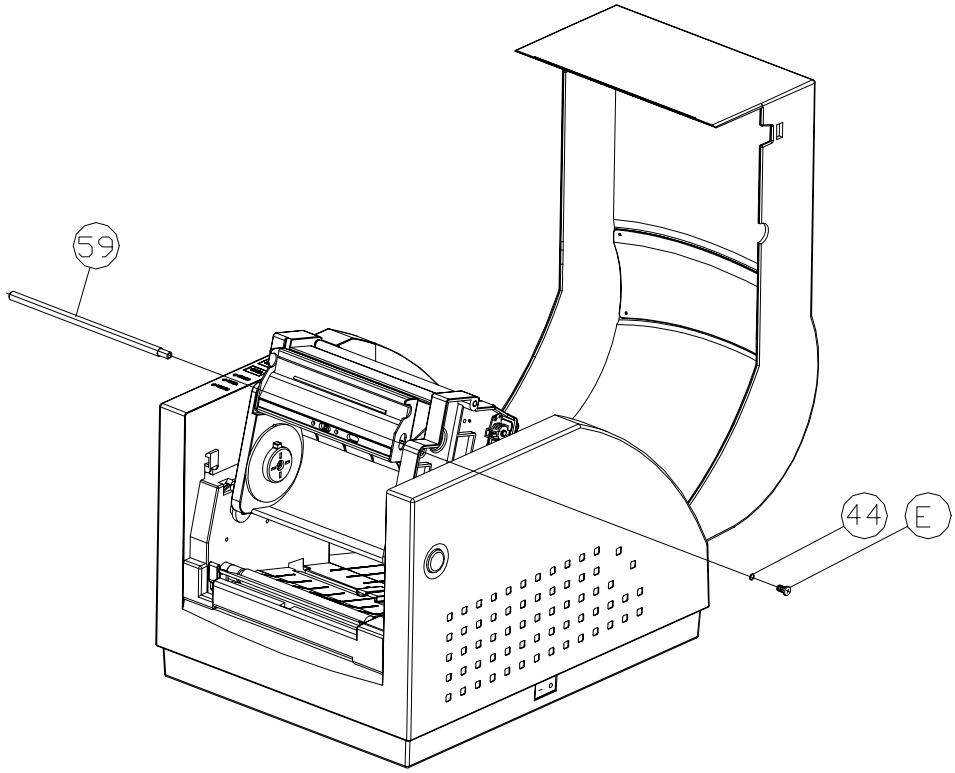


Fig. 3: Removing the printhead, steps 1 and 2.

1. Release the screw (E) and (44) (see Fig. 3).
2. Remove the shaft (59) from the module (see Fig. 3).

3. Release the screw (E) and (A) (see Fig. 4).
4. Remove the print head cable from the print head (see Fig. 4).
5. Remove the print head (56) from the bracket (55) (see Fig. 4).

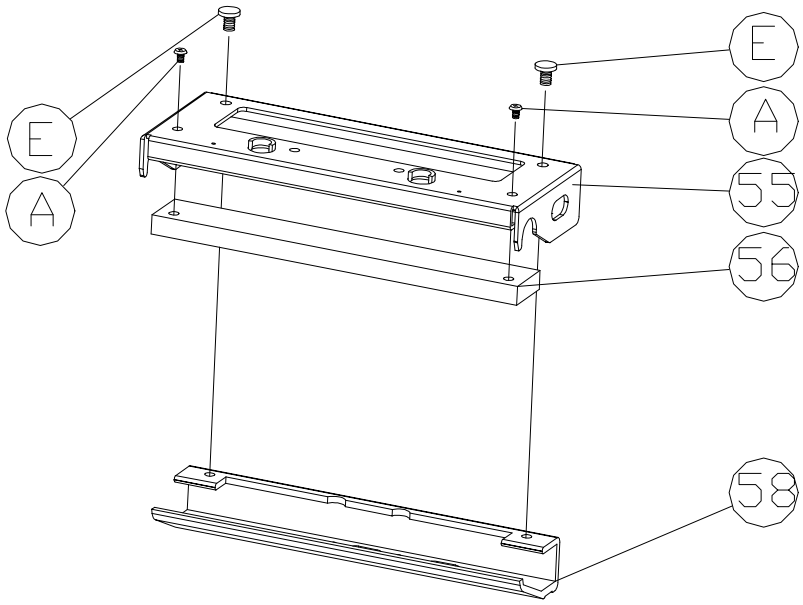


Fig. 4: Removing the printhead, steps 3 to 5.

Operational Theorem

System block diagram

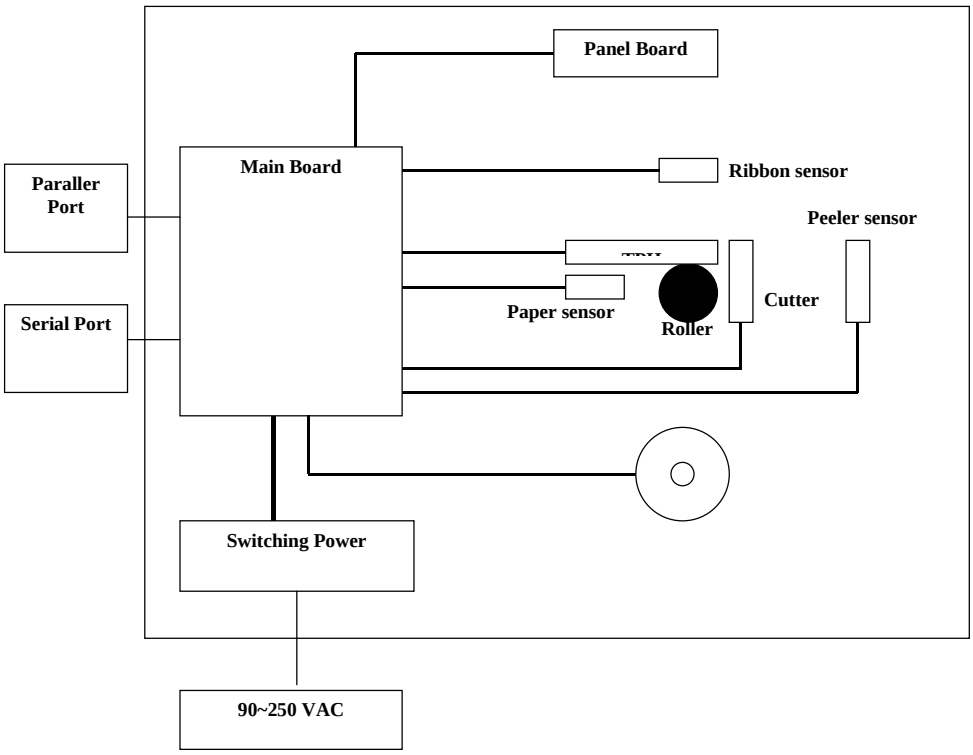


Fig. 5: AP 3.4 System Block Diagram.

Main board A four layers PCBA, consists of a micro-controller, EPROMs, EEPROM, DRAM …… components required for the printing functions.

Panel board A one layers PCBA, consist of a three push button switches, three LED indicators for user's access, status and error indication.

Ribbon sensor A two layer PCBA, consist of a reflective type object sensor designate for ribbon detection.

Media sensor A two layer PCBA, consist of a reflective type object sensor designate for media/gap detection.

Printhead There are 864 heat elements consist in the printhead. Each heat element can be turn on/off Individually.

Motor A Bipolar Hybrid Stepping Motor Is Used For Carrying Label And Ribbon During Printing.

Peeler Sensor (Option) An two layer PCBA, consist of a reflective type object sensor designate to detect the printed label is removed or still exist.

Cutter assembly (Option) Consisting of a DC motor, a switch,gears and a rotary cutter. It is used for cutting the printed label automatically.

Switching Power supply The switching Power supply converts the input power (90 VAC to 250 VAC) to 24 VDC. A 5 Amps fuse is also included in the power supply for over current protection.

Host controller An equipment which can send the printing command to printer through RS232 serial port or Centronics parallel port. Usually a PC is connected.

Micro-controller (U6) A HITACHI 32 bit RISC processor is selected as the controller for this printer. The rich on-chip functions such as: Integrated timer, DMA controller, A/D convert, Serial communication interface, Pattern generator and I/O ports make the printer high performance and compact size.

FLASH memory (U8,U9) There are two 512 K bytes FLASH on the main board to store the program, character and bar code fonts.

DRAM (U10) A sixteen mega bits DRAM is selected as the medium of storage for the printing image. In order to have fast access to the memory, 16 bits data bus width is selected.

EEPROM (U7) There are some parameters which are stored in EEPROM for printing, communication, ribbon and media detection and special controls.

Printhead driver (U1,U2) Through these drivers, the control and data signals are feed to printhead for image printing.

Cutter driver (U2) In order to prevent the cutter from stuck, Relay function cutter baby board will be handle the cutter stop position.

RS232 Driver/receiver (U4) To convert the serial port signal to/from micro-controller to RS232 voltage level, a RS232 driver/receiver with integral charge pump circuit is used.

Centronics Interface (U11,U13,U19) Through these interface, all the data come from the host controller are latched then read by the Micro-controller.

DC/DC converter (U20,L1,D2) To convert the 24 V input power to 5 V, to be used as the power supply for micro-controller, EPROM, DRAM……etc.

Relay (RY2) To prevent the printhead from being damaged by the unstable power condition when the printer is switched on, RY2 disconnected the power supply (24V) to the printhead. RY2 has to be activated before printing.

Extension slot (JP11) This slot is designate for the connection of all the optional extension modules.

Panel board diagram and description

The Panel board consists of three push bottom switches and three LED indicators for user's access, status and error indication.

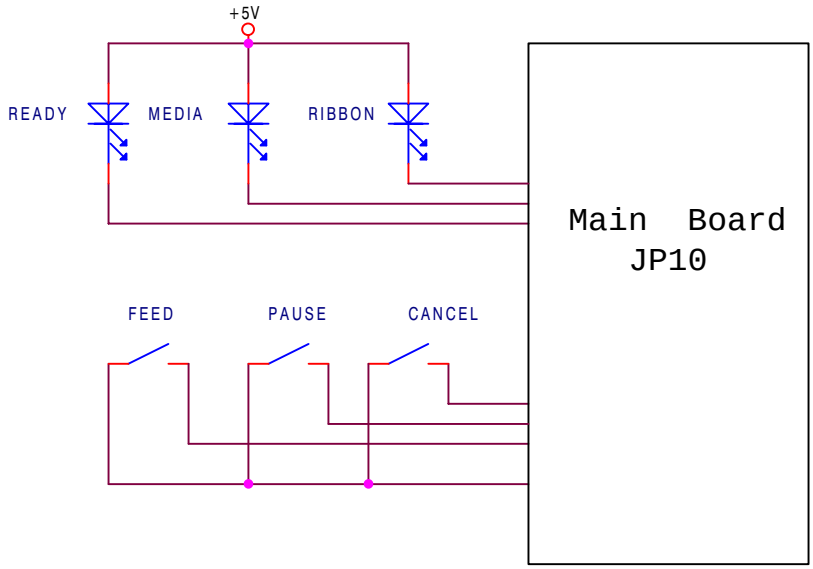


Fig. 6: Panel board diagram.

Sensor board diagram and description

The circuit of all the sensor board (Media sensor board, Ribbon sensor board and Peeler board) are identical. A reflective sensor are used for these purposes.

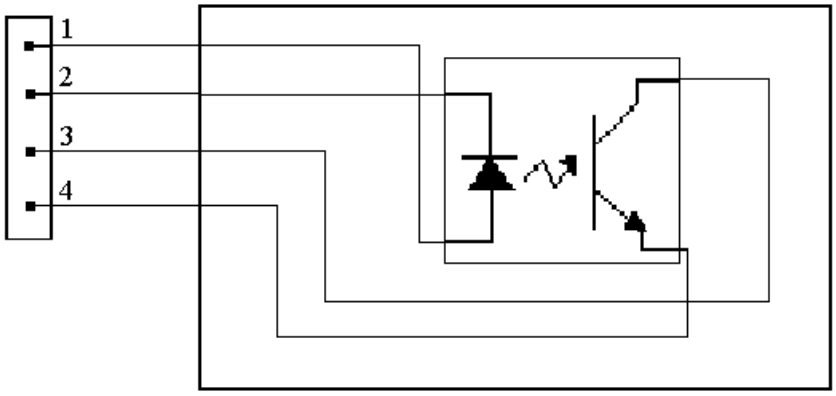


Fig. 7: Sensor board diagram.

Wiring diagram

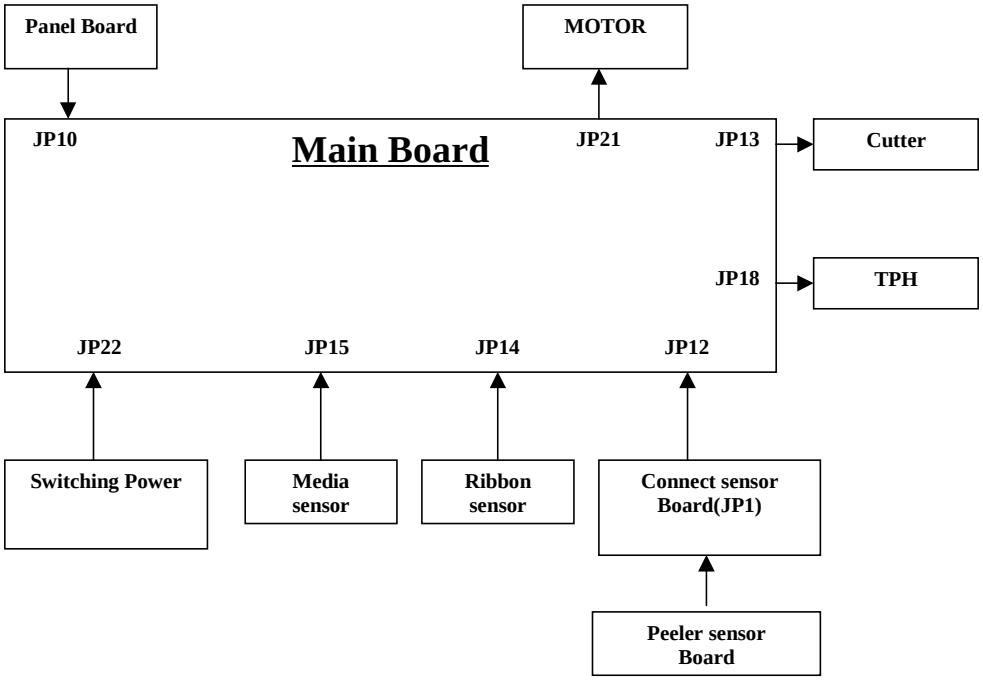


Fig. 8: Main board wiring diagram.

Firmware upgrading

There are two ways to upgrade the firmware or change the emulation (from PPLA to PPLB or PPLB to PPLA).

1. Burn flash ROMs for U8 and U9.

➠ The flash ROM type must be *MX 29F040*!
Each file (flash ROM) size is 512K bytes.

2. Run the printer utility to upgrade firmware version.

➠ When update utility unsuccessfully, flash ROM U8 and U9 must be burn with proper firmware by EPROM programmer!

Upgrade Utility and Diskette

This diskette (ZIP file) contains the related files and data that you may change or upgrade the firmware.

The AP 3.4 basically can run 2 emulation, PPLA (DPL) or PPLB (EPL2) emulation. It depends on which emulation is burned on the on-board flash memory.

➔ Before changing the firmware decompress the file first:

1. C:\>MD ARGX
2. C:\>CD ARGX
3. C:\ARGX\>COPY A:README.TXT
4. C:\ARGX\>A:PKUNZIP A:FW.ZIP

Procedure to change the PPLA

(DPL emulation)

➠ It is prohibited to run under Windows DOS!

➠ It is very important that *Do Not Turn Off* the printer during changing the firmware till "update complete" is present. Otherwise unpredictable results may occur!

1. Turn on the printer and wait for 3 seconds.
2. Set PC to MS-DOS (exit from Windows).
3. C:\ARGX\>PPLA

   …....

   …….

4. When "update complete " message is displayed on the screen, turn off the power until all the LEDs go OFF then turn on the printer again.
5. When update successfully, please reset the printer. (Press CANCEL/RESET while turning on the printer.)
6. When "RESTART PRINTER " is displayed on the LCD and/or PC, turn off the power until all the LED go OFF then turn on the printer again.

Procedure to change the PPLB

(EPL2 emulation)

It is prohibited to run under Windows DOS!

It is very important that *Do Not Turn Off* the printer during changing the firmware till "update complete" is present. Otherwise unpredictable results may occur!

1. Turn on the printer and wait for 3 seconds
2. Set PC to MS-DOS (exit from Windows)
3. C:\ARGX\>PPLB

   …....
4. When "update complete " message is displayed on the screen, turn off the power until all the LEDs go OFF then turn on the printer again.
5. When update successfully, please reset the printer. (Press CANCEL/RESET while turning on the printer.)

If the whole procedure can not be completed within 3 minutes or "Printer Time Out" happens, rerun all procedure. That is for example:

- Write fault error writing device LPT1
- Abort, Retry, Ignore, Fail ?
- You just type <Ctrl-C> and then Y to terminate the procedure.

1. Printer: Turn off and turn on the printer
2. PC: abort the transmission and type
   - PPLA or
   - PPLB

Verification

To confirm that you had successfully changed the firmware you just check the self/configuration printout.

1. Turn off the printer until all the LED go OFF
2. Press the FEED button and turn on the printer
3. When the motor starts rotation release the button
4. Check the version code and date code, also the checksum code (must be 0000).

EPROM files

The binary files for U8 and U9 can be generated by following procedures:

- EPROM PPLA
  This command will generate PPLAU8.BIN and PPLAU9.BIN
- EPROM PPLB
  This command will generate PPLBU8.BIN and PPLBU9.BIN

  These binary files is used for burning the flash ROMs on the EPROM / flash memory programmer.

Index

C
Calibrating sensor *5*
Centronics *9*
Cutter assembly *8*
Cutter driver *9*
Cutter Installation *2*

D
DC/DC converter *9*
Diagram
- Panel board block diagram *10*
- Sensor board block diagram *10*
- System block diagram *8*
- Wiring diagram *11*

DPL emulation *12*
DRAM *9*

E
EEPROM *9*
EPL2 emulation *13*
EPROM files *13*
Extension slot *9*

F
Firmware upgrading *12*
FLASH memory *9*
Flash ROM *12*

H
Host controller *9*

I
Installation *4*

M
Main board *8*
Media sensor *8*
Micro-controller *9*
Motor *8*

P
Panel board *8*
Peeler Sensor *8*
PPLA, changing the *12*
PPLB, changing the *13*
Printhead *8*
Printhead driver *9*
Printhead replacement *6*

R
Relay *9*
Replacing the printhead *6*
Ribbon sensor *8*
RS232 *9*

S
Sensor calibration *5*
Switching Power supply *8*

U
Upgrade Utility *12*

V
Verification, firmware upgrading *13*